

**Office Action Summary**

Application No.

09/055,201

Applicant(s)

BROWN ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-11,14,15,24,26-38,40-62,64-73 and 75-85 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11,14,15,24,26-38,40-62,64-73 and 75-85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 6, 9, 24, 31, 35, 56, 59-61, 74, 77, 79, and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ole D. Krogh (USPat. 5,453,125) in view of Foster et al (USPat. 5,567,243). Krogh teaches a process chamber (16, Figure 2; column 7, lines 22-51) for processing a substrate (17, Figure 2; column 7, lines 22-51) in a process gas (column 7, line 40-45) and reducing emissions of hazardous gas to the environment (column 3, line 38 – column 4, line 36), the process chamber comprising:
  - i. A support capable of supporting the substrate (17, Figure 2)
  - ii. A gas distributor (18) capable of introducing process gas into the process chamber
  - iii. An exhaust tube (7) through which the effluent may be flowed, the exhaust tube (7) comprises an inlet (upstream end) and an outlet (downstream end) that are substantially facing each other in an opposing relationship
  - iv. The exhaust tube comprises sapphire ( $\text{Al}_2\text{O}_3$  column 5, lines 39-45) and the exhaust tube, of sufficient length, and being adapted to provide a non-circuitous and non-turbulent flow of effluent there through by being substantially absent projections or recesses (Figure 1) that either alter the flow direction of the effluent to provide a circuitous flow of effluent through the exhaust tube or that cause turbulence in the flow of the effluent through the exhaust tube
  - v. A microwave (column 4, lines 26-33) energy applicator (column 6, lines 24-27) to couple microwave energy (column 4, lines 26-33) to the effluent flow, by a waveguide (column 4,

Art Unit: 1763

lines 65-67), through the exhaust tube to reduce the hazardous gas content of the effluent (column 6, lines 9-28)

- vi. The exhaust tube comprises a cylinder (7 or 8) having an axis parallel to the direction of the flow of the effluent through the exhaust tube
- vii. A reagent gas mixer (not shown) capable of mixing a reagent gas with the effluent (column 6, lines 21-24)

Krogh does not teach a process chamber with a gas activator capable of activating the process gas to perform a process in the process chamber. Krogh does not teach energy application in the RF frequency band (column 4, lines 26-33).

Foster teaches a process chamber (5, Figure 1) for processing a substrate (22) in a process gas (column 8, lines 33-65; column 10, lines 34-50). Foster further teaches a support (20) capable of supporting the substrate, a gas distributor (30) capable of introducing process gas into the process chamber, and a gas activator (24) capable of activating the process gas (column 8, lines 33-55) to perform a process in the process chamber.

Foster also teaches, in a second embodiment, a process chamber (40, Figure 2) for processing a substrate (48) in a process gas (column 13, lines 23-30). Foster further teaches a support (46) capable of supporting the substrate, a gas distributor (52) capable of introducing process gas into the process chamber, and an RF gas activator (57) capable of activating the process gas (column 14, lines 18-28) to perform a process in the process chamber.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Krogh to replace his process chamber with Foster's process chamber, and for Krogh to optimize Krogh's energy frequency to be within the RF frequency band.

Art Unit: 1763

The motivation for replacing the generic processing chamber of Krogh with Foster's process chamber, and for Krogh to optimize Krogh's energy frequency to be within the RF frequency band is to supply a specific processing chamber for the required but generically described process chamber of Krogh and for Krogh to optimize the operation of his energy applicator as taught by Krogh (column 4, lines 26-33).

3. Claims 10, 11, 15, 26, 27, 28, 29, 30, 40, 43-46, 49-54, 66, 69-71, 75, 76, 78, and 81-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (USPat. 5,352,902) in view of Ole D. Krogh (USPat. 5,453,125). Aoki teaches a plasma processing apparatus (1, Figure 4; column 4, line 57- end) including an exhaust tube ("discharge port", as part of optical system 3; Figure 4). Aoki further teaches:

- i. A support capable of supporting the substrate (boat 14, Figure 2; column 3, lines 5-10)
- ii. A gas distributor (20) capable of introducing process gas into the process chamber
- iii. An exhaust tube (2) through which the effluent may be flowed
- iv. A process chamber (1) with a gas activator (16, 17) capable of activating the process gas to perform a process in the process chamber (column 3, lines 5-41).
- v. a gas analyzer (3, Figure 4; column 4, line 64 - column 5, line 50) capable of monitoring the gas content of the effluent and providing a signal ("electrical signals"; column 4, line 64 - column 5, line 50) in relation to the gas content of the effluent; and
- vi. a computer controller (5B, Figure 4; column 5, lines 50-60; column 7, lines 18-29) system comprising a computer readable medium having computer readable program code embodied therein (5, Figure 4; column 5, lines 33-41), the computer controller (5B, Figure 4; column 5, lines 50-60; column 7, lines 18-29) system capable of monitoring the signal ("electrical

Art Unit: 1763

signals”; column 4, line 64 - column 5, line 50) from the gas analyzer (3, Figure 4; column 4, line 64 - column 5, line 50; column 7, lines 4-17), determining whether the gas content of the effluent exceeds a level (column 7, lines 25-29), and as a result performing at least one of the following:

- vii. adjusting a power (column 5, lines 55-60) applied to an energy applicator (16, 17; “RF”) to influence the hazardous gas content in the effluent,
- viii. adjusting process conditions (20A; 20B; 16; 17; Figure 4; column 5, lines 51-60) in the process chamber to influence the hazardous gas content in the effluent,
- ix. activating an alarm (“Step I-8”; Figure 6) or metering display
- x. controlling the termination the process (column 8, lines 53-65)

Aoki does not teach a RF energy applicator to couple RF to the effluent flowing through the exhaust tube to reduce the hazardous gas content of the effluent.

Ole D. Krogh is discussed above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Aoki to use and control Ole D. Krogh’s microwave (column 4, lines 26-33) energy applicator to couple microwave energy (column 4, lines 26-33) to the effluent flowing through the exhaust tube to reduce the hazardous gas content of the effluent.

Motivation for Aoki to use and control Ole D. Krogh’s microwave energy applicator to couple microwaves to the effluent flowing through the exhaust tube to reduce the hazardous gas content of the effluent is to reduce human toxicity of the effluent gas as taught by Krogh (column 3, lines 38-55).

Art Unit: 1763

4. Claims 11, 15, 26, 27, 28, 29, 30, 37, 38, 50-54, 64-66, 69-71, 76, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ole D. Krogh (USPat. 5,453,125) and Foster et al (USPat. 5,567,243), in view of Aoki (USPat. 5,352,902). Aoki, Ole D. Krogh, and Foster et al are discussed above. However, Ole D. Krogh and Foster et al do not teach:

- i. a gas analyzer capable of monitoring the gas content of the effluent and providing a signal in relation to the gas content of the effluent; and
- ii. a computer controller system comprising a computer readable medium having computer readable program code embodied therein, the computer controller system capable of monitoring the signal from the gas analyzer, determining whether the gas content of the effluent exceeds a level, performing at least one of the following:
- iii. adjusting a power applied to an energy applicator to influence the hazardous gas content in the effluent,
- iv. adjusting process conditions in the process chamber to influence the hazardous gas content in the effluent,
- v. activating an alarm or metering display

Aoki further teaches:

- vi. a gas analyzer (3, Figure 4; column 4, line 64 - column 5, line 50) capable of monitoring the gas content of the effluent and providing a signal ("electrical signals"; column 4, line 64 - column 5, line 50) in relation to the gas content of the effluent; and
- vii. a computer controller (5B, Figure 4; column 5, lines 50-60; column 7, lines 18-29) system comprising a computer readable medium having computer readable program code embodied therein (5, Figure 4; column 5, lines 33-41), the computer controller (5B, Figure 4; column 5,

Art Unit: 1763

lines 50-60; column 7, lines 18-29) system capable of monitoring the signal (“electrical signals”; column 4, line 64 - column 5, line 50) from the gas analyzer (3, Figure 4; column 4, line 64 - column 5, line 50; column 7, lines 4-17), determining whether the gas content of the effluent exceeds a level (column 7, lines 25-29), performing at least one of the following:

- viii. adjusting a power (column 5, lines 55-60) applied to an energy applicator (16, 17; “RF”) to influence the hazardous gas content in the effluent,
- ix. adjusting process conditions (20A; 20B; 16; 17; Figure 4; column 5, lines 51-60) in the process chamber to influence the hazardous gas content in the effluent,
- x. activating an alarm (“Step I-8”; Figure 6) or metering display
- xi. terminating the process (column 8, lines 53-65)

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Ole D. Krogh and Foster to use Aoki’s computer controller system.

Motivation for Ole D. Krogh and Foster to use Aoki’s computer controller system is for automation and control of the plasma process (column 2, lines 13-34). It is further provided that computer automation of the plasma processes provides optimization of the processes. (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); MPEP 2144.05).

5. Claims 2-5, and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ole D. Krogh (USPat. 5,453,125) in view of Foster et al (USPat. 5,567,243). Ole D. Krogh and Foster are discussed above. However, Krogh and Foster do not teach an exhaust tube comprising

Art Unit: 1763

a length that is sufficiently long to provide a residence time of the effluent that is at least about 0.01 seconds. Krogh and Foster do not teach laminar flow through the exhaust tube.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Krogh to vary the length of the exhaust tube to provide a residence time of the effluent that is at least about 0.01 seconds, and for Krogh and Foster to provide a laminar flow through the exhaust tube by varying the flow rate of the effluent and/or reactant gas.

Motivation for Krogh and Foster to vary the length of the exhaust tube to provide a residence time of the effluent that is at least about 0.01 seconds and to provide a laminar flow is to optimize the destruction of the effluent gas (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); MPEP 2144.05). Furthermore, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04).

6. Claims 41-43, 51, and 67-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (USPat. 5,352,902) and Ole D. Krogh (USPat. 5,453,125), as applied to claims 10, 11, and 26. However, Aoki and Krogh do not teach an exhaust tube comprising a length that is sufficiently long to provide a residence time of the effluent that is at least about 0.01 seconds. Aoki and Krogh do not teach laminar flow through the exhaust tube.



Art Unit: 1763

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Aoki and Krogh to vary the length of the exhaust tube to provide a residence time of the effluent that is at least about 0.01 seconds, and for Aoki and Krogh to provide a laminar flow through the exhaust tube by varying the flow rate of the effluent and/or reactant gas.

Motivation for Aoki and Krogh to vary the length of the exhaust tube to provide a residence time of the effluent that is at least about 0.01 seconds and to provide a laminar flow is to optimize the destruction of the effluent gas (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); MPEP 2144.05). Furthermore, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04).

7. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ole D. Krogh (USPat. 5,453,125) and Foster et al (USPat. 5,567,243) in view of Maeba et al (USPat. 4,816,046). Krogh and Foster are discussed above. Krogh and Foster do not teach an RF energy applicator to couple RF energy to the effluent. Maeba teaches plasma CVD effluent gas treatment (column 3, lines 45-60; column 4, lines 58-65). Maeba teaches an RF energy applicator (34/35; Figure 10) to couple RF energy to the effluent (23). However, Maeba does not teach a gas distributor, a gas activator, or a substrate support.

Art Unit: 1763

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Krogh and Foster to add Maeba's RF energy applicator to couple RF energy to the effluent.

Motivation for Krogh and Foster to add Maeba's RF energy applicator to couple RF energy to the effluent is for limiting process gas condensation leading to clogging of the vacuum pump (column 5, lines 3-10).

8. Claims 14, 33, 34, 36, 48, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (USPat. 5,352,902), Ole D. Krogh (USPat. 5,453,125), as applied to claims 10, 11 and 26 above, and further in view of Maeba et al (USPat. 4,816,046). Krogh further teaches a microwave (column 4, lines 26-33) energy applicator (column 6, lines 24-27) to couple microwave energy (column 4, lines 26-33) to the effluent flow, by a waveguide (column 4, lines 65-67), through the exhaust tube to reduce the hazardous gas content of the effluent (column 6, lines 9-28).

Aoki, and Krogh do not teach an RF energy applicator to couple RF energy to the effluent. Maeba teaches plasma CVD effluent gas treatment (column 3, lines 45-60; column 4, lines 58-65). Maeba teaches an RF energy applicator (34/35; Figure 10) to couple RF energy to the effluent (23). However, Maeba does not teach a gas distributor, a gas activator, or a substrate support.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Aoki and Krogh to add Maeba's RF energy applicator to couple RF energy to the effluent.

Motivation for Aoki and Krogh to add Maeba's RF energy applicator to couple RF energy to the effluent is for limiting process gas condensation leading to clogging of the vacuum pump (column 5, lines 3-10).

9. Claims 47, 55, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (USPat. 5,352,902) in view of Ole D. Krogh (USPat. 5,453,125). Aoki and Ole D. Krogh are discussed above. However, Krogh only teaches sapphire comprising the exhaust tube. As a result, Krogh does not teach monocrystalline sapphire comprising the exhaust tube.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Aoki and Ole D. Krogh to replace the sapphire comprising the exhaust tube with monocrystalline sapphire.

The replacement of the sapphire comprising the exhaust tube with monocrystalline sapphire is an equivalent replacement.

10. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ole D. Krogh (USPat. 5,453,125) in view of Foster et al (USPat. 5,567,243). Ole D. Krogh and Foster are discussed above. However, Krogh only teaches sapphire comprising the exhaust tube. As a result, Krogh does not teach monocrystalline sapphire comprising the exhaust tube.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Ole D. Krogh and Foster to replace the sapphire comprising the exhaust tube with monocrystalline sapphire.

The replacement of the sapphire comprising the exhaust tube with monocrystalline sapphire is an equivalent replacement.

11. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (USPat. 5,352,902), Ole D. Krogh (USPat. 5,453,125), as applied to claim 11 above, and further in view of Maeba et al (USPat. 4,816,046). Aoki, and Krogh do not teach an RF energy applicator to couple RF energy to the effluent. Maeba teaches plasma CVD effluent gas treatment (column 3,

Art Unit: 1763

lines 45-60; column 4, lines 58-65). Maeba teaches an RF energy applicator (34/35; Figure 10) to couple RF energy to the effluent (23). However, Maeba does not teach a gas distributor, a gas activator, or a substrate support.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Aoki and Krogh to add Maeba's RF energy applicator to couple RF energy to the effluent.

Motivation for Aoki and Krogh to add Maeba's RF energy applicator to couple RF energy to the effluent is for limiting process gas condensation leading to clogging of the vacuum pump (column 5, lines 3-10).

12. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ole D. Krogh (USPat. 5,453,125) and Foster et al (USPat. 5,567,243). Ole D. Krogh and Foster are discussed above. However, Krogh only teaches sapphire comprising the exhaust tube. As a result, Krogh does not teach monocrystalline sapphire comprising the exhaust tube.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Foster and Ole D. Krogh to replace the sapphire comprising the exhaust tube with monocrystalline sapphire.

The replacement of the sapphire comprising the exhaust tube with monocrystalline sapphire is an equivalent replacement.

### ***Response to Arguments***

13. Applicant's arguments filed March 10, 2003 have been fully considered but they are not persuasive.

14. In response to applicant's argument that Krogh does not teach "an inlet port (7), plasma source (1), and exit port (8)" because Krogh "inlet port (7), plasma source (1), and exit port (8)

Art Unit: 1763

are not the same because these structures are joined such that right angled recesses are present in the structure.”, thereby the reference failing to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., “inlet port (7), plasma source (1), and exit port (8) are not the same because these structures are joined such that right angled recesses are present in the structure.”, and that “the diameter through which the effluent passes changes instantly at the right-angle junction between the inlet port (7) and the plasma source (1)”) is not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

15. In response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., “the plasma source of Krogh is also substantially square-shaped with square corners, as shown in Figure 1”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

16. Applicant position that Krogh does not teach a “non-circuitous and non-turbulent flow”, the Examiner disagrees. Specifically, it was stated that Krogh teaches “The exhaust tube comprises sapphire (Al<sub>2</sub>O<sub>3</sub> column 5, lines 39-45) and the exhaust tube, of sufficient length, and being adapted to provide a non-circuitous and non-turbulent flow of effluent there through by being substantially absent projections or recesses (Figure 1) that either alter the flow direction of the effluent to provide a circuitous flow of effluent through the exhaust tube or that cause turbulence in the flow of the effluent through the exhaust tube”. Further, When the structure

Art Unit: 1763

recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

17. Applicant's position that Foster does not teach "an RF energy applicator" is addressed above.

18. Applicant's position that Krogh, Foster, Maeba, and Aoki do not teach "a computer controller system comprising a computer readable medium having computer readable program code embodied therein, the computer controller system capable of monitoring the signal from the gas analyzer, determining whether the gas content of the effluent exceeds a level" and that Krogh is silent "on the matter of any computer controller system" is not convincing. The Examiner clearly identified Aoki as teaching "a computer controller (5B, Figure 4; column 5, lines 50-60; column 7, lines 18-29) system comprising a computer readable medium having computer readable program code embodied therein (5, Figure 4; column 5, lines 33-41), the computer controller (5B, Figure 4; column 5, lines 50-60; column 7, lines 18-29) system capable of monitoring the signal ("electrical signals"; column 4, line 64 - column 5, line 50) from the gas analyzer (3, Figure 4; column 4, line 64 - column 5, line 50; column 7, lines 4-17), determining whether the gas content of the effluent exceeds a level (column 7, lines 25-29)".

19. Applicant states on page 28 that "a control/computation unit that detects conditions indicative of an endpoint and ends the etching process" is different from a computer controller of the present invention. However, Aoki clearly provides a computer controller capable of conducting Applicant's function of process control including, for example, "safety operational program code" (see Aoki above). When the structure recited in the reference is substantially

Art Unit: 1763

identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

20. Specifically, Aoki's computer controller is capable of performing the claimed operation.

According to Aoki:

“

The controlling device 5 comprises a data computing unit 51 for computing detection data, based on detection electric signals and reference electric signals, a reference data memory 52 for storing reference data indicating endpoints of the etching and the ashing which have been given beforehand as experimental data, and a control/computation unit 53 for comparing the detection data with the reference data, and when both agree with each other, producing and outputting a control signal.

“ (column 5, lines 33-41).

Aoki's "detection data" being:

“

The data computing unit 51 computes detection<sup>1</sup> data, based on the detection electric signal and the reference electric signal from the detection unit 4 (Step 1-6). The computed detection data may be values given by ratios of voltage values between the detection electric signal and the reference electric signal. The computed detection data is supplied to the control/computation unit 53. The control/computation unit 53 reads from a reference data memory 52 reference data indicative of an endpoint of the etching, and compares the detection data with the reference data to judge whether both data agree with each other (Step 1-7).

---

<sup>1</sup> Interpreted as "detection".

“(column 7, lines 18-29).

As such, Aoki can provide detection and comparison of “concentrations of produced gases contained in the exhaust gas are detected, and the detected concentration data and reference data are compared to continuously control and process the respective surface-treatments.” as taught by Aoki (column 9, lines 27-38). Concretely, Aoki clearly provides a computer controller capable of conducting Applicant’s function of process control including, for example, “safety operational program code” (see Aoki above). When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

21. Applicant states that claims 1 and 24 are patentable over Maeba et al. The Examiner did not reject claim 1 applying the Maeba reference. Claims 14, 32, 34, 36, 48, and 73 were rejected in view of Maeba. See above. Further, Applicant is arguing content of claims 8 and 63 that have been cancelled.

### ***Conclusion***

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner



Art Unit: 1763

can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.

*Rudy Gonzalez*  
*CHB*